



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY  
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**FOURTH YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR DEGREE  
OF BACHELOR OF SCIENCE IN NIMAL SCIENCE**

**2019/2020 ACADEMIC YEAR**

**RESIT EXAMS**

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**COURSE CODE: AAS 3415**

**COURSE TITLE: Animal Breeding**

**EXAM VENUE:**

**STREAM: BSc. (Animal Science)**

**DATE:**

**EXAM SESSION:**

**TIME: 2.00 Hours**

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**Instructions:**

- 1. Answer ALL question in Section A (compulsory) and ANY other TWO questions in Section B.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

## SECTION A [30 MARKS]

**Answer ALL questions from this Section.**

### **Question 1**

- a) Explain the following phenomena and show the relevance of each to practical animal breeding:
- i) Genotype X Environment interaction. (2 marks)
  - ii) Genotype - Environment correlation. (2 marks)
  - iii) Indirect response to selection. (2 marks)
  - iv) Pleiotropy is the main cause of genetic correlations between quantitative traits. (4 marks)

### **Question 2**

Assume that selection is carried out separately among males and females in a herd of Kenya Boran cattle in which the average daily gain is 0.45 kg/day; and the means of selected males and females are 0.80 and 0.60 g/day, respectively.

- a) Calculate the average selection differential in kg/day when both males and females are selected. (3 marks)
- b) Repeat (a) above when males only are selected. (3 marks)
- c) By what amount (%) has the potential genetic gain been reduced by selecting for males only? (4 marks)

### **Question 3**

- a) Differentiate between family and within family selection. (3 marks)
- b) What are the main limitations of family selection? (5 marks)
- c) Under what conditions is family selection recommended? (2 marks)

